Amendments to the Specification:

Please amend the paragraph beginning on line 1 of page 2 as follows:

Fig. [[12]] 9 is a plan view illustrating a configuration of the optical switch disclosed as the conventional technique A. The optical switch includes a glass piece 115 movable along a groove provided in an interior 113 of a groove section 112 crossing an optical waveguide 111 formed on a substrate; a liquid metal holding groove 117 placed at both ends of the glass piece 115 and communicating to the groove section 112, for holding a liquid metal (mercury) 116 in the interior; electrodes 118A, 118B and 119A, 119B for flowing current through each of the liquid metals 116 held in the interior of the liquid metal holding groove 117; and a magnetic field applying section (not shown) for applying a magnetic field in a direction perpendicular to the current direction.

Please amend the paragraph beginning on line 8 of page 3 as follows:

Fig. [[13]] 10 is a schematic cross-sectional view showing a configuration of an optical switch disclosed as the conventional technique B. In Fig. [[13]] 10, the reference numeral 121 designates a displacement plate composed of a conductive material, 122 designates an element at the front end of the displacement plate 121 for interrupting/transmitting propagating light, 124 designates an insulating layer for supporting the rear end side of the displacement plate 121, 125 designates a switch, 126 designates a power supply, 128 designates an optical waveguide, 127 designates a gap across the optical waveguide 128, and 123 designates a conductive material

layer mounted on a surface of the optical waveguide 128 in such a manner that the conductive material layer is parallel to the waveguide direction of the light.

Please amend the paragraph beginning on line 22 of page 3 as follows:

In the optical switch with the configuration as shown in Fig. [[13]] 10, the element 122 moves in a direction normal to the substrate (up and down direction of the sheet) because of the electrostatic force caused between the displacement plate 121 and the conductive material layer 123 by applying voltage, thereby carrying out the optical switch operation of interrupting/transmitting.

Please delete the paragraph beginning on line 23 of page 6 that begins "Fig. 3 is a cross-sectional view ..."

Please delete the paragraph beginning on line 27 of page 6 that begins "Fig. 4 is a cross-sectional view ..."

Please amend the paragraph beginning on line 2 of page 7 as follows:

Fig. [[5]] 3 is a diagram illustrating an optical waveguide with a configuration whose entire domain is expanded to the outside of the magnet;

Please amend the paragraph beginning on line 5 of page 7 as follows:

Fig. [[6]] 4 is a plan view of an optical waveguide for illustrating a shape of a magnet embedded in an optical waveguide, the optical device in accordance with the present invention;

Please amend the paragraph beginning on line 9 of page 7 as follows:

Fig. [[7]] 5 is a plan view of an optical waveguide for illustrating another shape of a magnet embedded in an optical waveguide, an optical device in accordance with the present invention;

Please amend the paragraph beginning on line 13 of page 7 as follows:

Fig. [[8]] 6 is a plan view illustrating a configuration of an optical waveguide, an optical device in accordance with the present invention;

Please amend the paragraph beginning on line 16 of page 7 as follows:

Fig. [[9]] 7 is a schematic cross-sectional view illustrating relationships between an insertion plate and a slit section provided in an optical waveguide, an optical device in accordance with the present invention;

Please amend the paragraph beginning on line 20 of page 7 as follows:

Figs. ~~10A and 10B~~ 8A and 8B are plan views each showing the insertion plate and the cantilever shown in Fig. [[9]] 7, which are seen from a bottom side;

Please delete the paragraph beginning on line 23 of page 7 that begins "Fig. 11 is a cross-sectional view ..."

Please amend the paragraph beginning on line 27 of page 7 as follows:

Fig. [[12]] 9 is a plan view illustrating a configuration of an optical switch disclosed as the conventional technique A; and

Please amend the paragraph beginning on line 3 of page 8 as follows:

Fig. [[13]] 10 is a schematic cross-sectional view showing a configuration of an optical switch disclosed as the conventional technique B.

Please amend the paragraph beginning on line 8 of page 11 as follows:

~~Fig. 3 is a cross-sectional view illustrating a first configuration near a slit section and an insertion plate of an optical waveguide embedded in an optical device in accordance with the present invention.~~ An optical waveguide 91 (82, 83a, 83b, 84) is formed on a supporting

substrate [[92]] 81 of the optical waveguides. On the optical waveguide 91, an MEMS supporting substrate 94 and a magnet 95 are mounted. The MEMS supporting substrate 94 has an MEMS holding region 93 for accommodating an insertion plate driving mechanism (MEMS: micro-electromechanical system).

Please amend the paragraph beginning on line 18 of page 11 as follows:

~~Fig. 4 is a diagram illustrating a state of magnetic flux generated from a magnet as shown in Fig. 3. To help understanding, only the magnetic flux toward an optical waveguide 101 side is shown.~~ Since the magnetic ~~flux~~ field B becomes sparse and weak as the ~~flux~~ field B goes away from the magnet [[102]] 95, it is preferable that the MEMS holding region 93 in Fig. [[9]] 2 be placed as closed to the magnet 95 as possible to drive the insertion plate by taking full advantage of the effect of the magnet.

Please amend the paragraph beginning on line 10 of page 12 as follows:

Incidentally, Fig. [[5]] 3 is a diagram illustrating an optical waveguide with a configuration whose entire domain is expanded to the outside of a magnet.

Please amend the paragraph beginning on line 15 of page 12 as follows:

First, referring to Fig. [[3]] 2, the alignment of the optical waveguide 91 with the input side and output side fibers ~~96 and 97~~ in the vertical direction is carried out by aligning the center of the fiber cores [[98]] of the input side fiber [[96]] and output side fiber [[97]] of the optical signal to the end faces of the optical waveguide 91 at high accuracy, followed by fixing them mechanically. In this case, the radius of the fiber cladding layers [[99]], which cover the fiber cores [[98]] of the fibers ~~96 and 97~~ connected to the input and output end faces of the optical waveguide 91, is one hundred and a few tens of micrometers according to the current standard. The value is greater than a few tens of micrometers, the sum of the thickness of the core layer and that of the cladding layer constituting the optical waveguide 91. As a result, the top surface of the fiber cladding layer [[99]] surpasses the top surface of the optical waveguide 91.

Please amend the paragraph beginning on line 14 of page 13 as follows:

Therefore the distance between the bottom surface of the magnet 95 and the top surface of the optical waveguide 91, which is preferably as close as possible, is limited by the difference between the radius of the fiber cladding layer [[99]] and the sum of the thicknesses of the core layer and cladding layer constituting the optical waveguide 91. This hinders placing the magnet 95 in close proximity to the optical waveguide 91 to make effective use of the magnetic force.

Please amend the paragraph beginning on line 23 of page 13 as follows:

Second, to solve the problem, consider the case where the entire domain (regions 1+2+3+4+5) of the optical waveguides is extended outside the magnet region (region 10) as shown in Fig. [[5]] 3. In this case, it is unavoidable that the optical waveguides occupy an area four times that of the region 2 for placing the slit having the fundamental function of the optical device, which prevents the downsizing of the optical waveguide chip.

Please amend the paragraph beginning on line 8 of page 14 as follows:

Fig. [[6]] 4 is a plan view of an optical waveguide for illustrating a shape of a magnet embedded in an optical waveguide of an optical device in accordance with the present invention. The optical waveguide 12 is placed on a supporting substrate 11 that bears the square optical waveguide, and is composed of five waveguide regions having different functions.

Please amend the paragraph beginning on line 6 of page 15 as follows:

The magnet 18 has an octagonal shape formed by cutting away four corners (a, b, c, and d) from a square, and has a size and shape, enabling a projected image of the magnet 18 onto the optical waveguide 12 from a vertical direction remains within an area of the optical waveguide 12. Thus, the magnetic field intensity in the entire region 2 (14) becomes uniform, and the total area of the optical waveguide 12 can be reduced as compared with that of the conventional optical waveguide ~~shown in Fig. 7~~.

Please amend the paragraph beginning on line 15 of page 15 as follows:

Fig. [[7]] 5 is a plan view of an optical waveguide for illustrating another shape of the magnet embedded in an optical waveguide of an optical device in accordance with the present invention. An optical waveguide 22 is placed on a supporting substrate 21 that bears the square optical waveguide, and is composed of five waveguide regions having different functions.

Please amend the paragraph beginning on line 26 of page 16 as follows:

Although the magnet 28 has a shape of square in the example of Fig. [[7]] 5, which is simplest and easy to fabricate, this is not essential. Any shape such as a lozenge is acceptable as long as the direction of the magnetic field is perpendicular to the insertion plate, and the face of magnet covers the slit sections.

Please amend the paragraph beginning on line 15 of page 17 as follows:

Fig. [[8]] 6 is a plan view showing a configuration of an optical waveguide embedded in an optical device in accordance with the present invention. An optical waveguide 32 is formed on a supporting substrate 31 of the square optical waveguide consisting of five waveguide regions which are assigned different functions.

Please amend the paragraph beginning on line 3 of page 18 as follows:

Fig. [[8]] 6 illustrates a typical state of the optical waveguides in the input optical waveguide region 1 (33) by way of example of optical beams I_1 and I_2 which are the input light. As for the optical beam I_1, since the insertion plate M is within the slit section S, the input beam I_1 is reflected off the insertion plate M, and is output as reflected light R belonging to the fiber connecting region 3 (35) on the reflection output side. As for the optical beam I_2, on the other hand, since the insertion plate M is not present in the slit section S, the optical beam I_2 passes through the slit sections S and proceeds straight forward, and the transmitted light T is output from the region 4 (36) constituting the output optical fiber connecting region.

Please amend the paragraph beginning on line 17 of page 18 as follows:

When driving the insertion plate M by the magnetic field and current, the highest efficiency is achieved when the direction of the magnetic field B makes a right angle with a plane parallel to a cross section of the slit seen from the top in Fig. [[8]] 6 (or with a moving locus plane the insertion plate forms in the slit and its neighborhood). Accordingly, the magnet is placed in such a manner that the magnetic field B points the direction of the arrow B indicated by dotted lines in Fig. [[8]] 6. Incidentally, the insertion plate M is fixed to a cantilever not shown, so that the insertion plate M is driven in conjunction with the cantilever. The drive is carried out by controlling the current flowing through electric wiring formed on the insertion plate M or the cantilever near the insertion plate M.

Please amend the paragraph beginning on line 4 of page 19 as follows:

Fig. [[9]] 7 is a schematic cross-sectional view illustrating relationships between an insertion plate and a slit section. On a cladding layer 42 stacked on a substrate 41, an input fiber side optical waveguide core 43a and an output fiber side optical waveguide core 43b are formed. The slit section S is formed in a part of the optical waveguides formed by stacking a cladding layer 44 on these optical waveguide cores. The insertion plate M, which is fixed to a cantilever 45, is driven by a current flowing through electric wiring 46 which is formed at least on the cantilever 45 and has a specified length in the direction normal to the sheet, so that the insertion plate M is inserted into or removed from the slit section S.

Please amend the paragraph beginning on line 1 of page 20 as follows:

Here, the Lorentz force applied to the cantilever is given by the line integral of the vector product of the magnetic field and the current flowing through the wiring on the cantilever. It is important that the wiring does not form a closed loop. For example, as illustrated in Figs. ~~10A and 10B~~ 8A and 8B which will be described later, it is necessary that three sides of a rectangle are placed on the moving section of the cantilever, that the right side which is open in Figs. ~~10A and 10B~~ 8A and 8B has a fixed section on the cantilever, that the wiring is drawn out of the fixed section, and that there is no or nearly negligible magnetic field in the outside.

Please amend the paragraph beginning on line 13 of page 20 as follows:

Figs. ~~10A and 10B~~ 8A and 8B are plan views showing the insertion plate and cantilever of Fig. [[9]] 7 seen from the bottom side. Fig. [[10A]] 8A is a plan view showing an example in which an insertion plate 51a is attached perpendicularly to a extension direction of a cantilever 52a. In this case, the Lorentz force obtained as the line integral becomes maximum when the direction of the magnetic field is on the sheet, and is parallel to a longitudinal direction of the cantilever. Fig. [[10B]] 8B is a plan view when an insertion plate 51b is attached in parallel with the longitudinal direction of a cantilever 52b.

Please amend the paragraph beginning on line 5 of page 21 as follows:

~~Fig. 11 is a cross-sectional view illustrating a configuration near a slit section and an insertion plate of an optical waveguide, an optical device in accordance with the present invention.~~ An optical waveguide 61 (42, 43a, 43b, 48) is formed on a supporting substrate [[62]] 41 of the optical waveguide. On the optical waveguide 61, a MEMS supporting substrate 64 and a magnet 65 are mounted. A MEMS supporting substrate 64 has a MEMS holding region 63 for accommodating an insertion plate driving mechanism (MEMS).

Please amend the paragraph beginning on line 20 of page 21 as follows:

Incidentally, the alignment of the optical waveguide 61 with the input side and output side fibers ~~66 and 67~~ with the fiber cladding layers [[69]] in the vertical direction ~~of Fig. 11~~ is carried out by aligning the center of the fiber cores [[68]] of the input side fiber [[66]] and output side fiber [[67]] of an optical signal to the end faces of the optical waveguide 61 at high accuracy, followed by fixing them mechanically, thereby forming the optical device.

Please delete the paragraph beginning on line 1 of page 22 that begins "In addition, although ..."